Office Memorandum • UNITED STATES GOVERNMENT

TO : Assistant Director for Research and Reports DATE:

FROM : [redacted] 25X1A9a

SUBJECT: Task Force "One" - Non-ferrous Metals and Minerals

1. The opening statement that the figures on production, distribution and use are not actual but are estimates by analyst and therefore subject to varying degrees of error calls for a detailed statement of the methodology employed in making these estimates with respect to each item.

2. The B. list of metals and minerals should be reviewed as to importance of individual items. Also, further study should be made to include important items not listed.

3. Industrial Diamonds: There is too much general discussion in the introduction which is not relevant to the main intelligence problem. The statement is made that production is negligible, and admittedly that nothing is known about requirements. Nevertheless, the close range estimate is made of requirements of 250,000 to 270,000 carats with supplies of 340,000 to 390,000 carats—the difference being stockpiled. War requirements of 350,000 to 370,000 carats are given, with the statement that supplies would be cut off entirely from outside sources. All of these figures and their derivatives should be explained in detail. Minimum needs should be estimated even if based on United States practice. The statement about the substitution of the electro-mechanical process for industrial diamonds does not seem justified in its present state of development, and the nebulous information about it.

4. Mica: Although it is admitted that definite information is not available "it is assumed that domestic deposits are adequate for any emergency". This is based on the further assumption that the USSR made no requests for mica from India or Madagascar during World War II. In contrast to the extensive general introduction the question of requirements for both civilian use and for the military is disposed of by the statement "definite information is not available". The requirements with regard to the military is also disposed of by the statement "definite information is not available". The further generalized statement with regard to military requirements, i.e. "as the size of the campaign increased the volume of equipment and thus the volume of mica required would increase and reach a maximum with all out invasion of the United States" is a "glittering" generality that adds nothing to the subject. The following statements on supplies and stocks complete the "inventory of our ignorance" on this particular subject. "Definite information or statistics on production and capacity of mica mines in the Soviet Bloc is not available", and on stocks, "Information on quantity of mica in work inventories or strategic stockpiles is not available". It is suggested that a comprehensive review of the subject be made to develop quantitative information.

5. Graphite: There is entirely too much descriptive matter of a general nature on economic geography and technology in the introduction. The uses and range of applicability of manufactured graphite should be developed in detail to determine the extent to which the need for natural graphite can be eliminated. This is the heart of the question of the critical nature of natural graphite. The information on supplies appears indefinite, and on stocks and strategic reserves it is practically non-existent. With regard to requirements practically nothing is presented. The assumption is made that the annual consumption is 400 metric tons against a total purchase by the USSR in the period 1946 to 1950 of 17,000 metric tons (i.e. somewhat under requirements if the period is intended to be inclusive) (plus a small additional amount acquired clandestinely). From this it is concluded that the supply would be exhausted by 1951. This statement should be elaborated to show its basis; and the whole subject reviewed and strengthened.

6. Quartz Crystals: The presentation is interesting, but is too general and gives very little of a positive intelligence value regarding supplies, stockpiles, or requirements. The case for quartz is made on the presumptive evidence that there must be a sufficiency because the USSR has made no requests for quartz crystals. This, of course, does not take into account covert and overt sources about which we know nothing; nor is it a substitute for more positive information.

7. Aluminum

a. The paper on aluminum in its important and essential features such as production and especially requirements has employed the data presented in IM-181 and, therefore, has the same possibilities with further study of being expanded into a sound basis for intelligence on the subject. However, there appear to be some unwarrented departures which should be explained.

b. The current figure for production based on integration of known plant capacities is shown on page three as 205,000 metric tons for 1950; whereas IM-181 shows 200,000 tons for 1951. Both refer to primary aluminum. The figure of 205,000 tons is inconsistent with paragraph two on the same page showing capacity outputs by regions for 1950 which total 170,000 metric tons of primary aluminum and 70,000 metric tons of secondary aluminum, totalling 240,000 tons in 1950. The latter data is the same and therefore checks that shown in IM-181.

c. The distribution pattern in the report was taken from IM-181 in which it was first employed in connection with estimates on current requirements of aluminum. The present paper, however, departed from the over-all requirement figures of IM-181 without explaining how their estimate was derived.

d. The present report shows a "civilian consumption" requirement of "between 50,000 and 75,000 metric tons with the higher figure more likely". IM-181 (after a review of available data) shows the maximum of

largely [illegible] of deposits, plants for conversion, transport facilities, and vulnerabilities in China are in order. The statement about production—5,000 tons total which includes

72,000 metric tons for 1947 (the maximum was selected in view of an estimated production for that year of 150,000 metric tons); and by projecting requirements on the basis of the increased production from year to year the following figures were obtained: 99,000 metric tons for 1950 and 114,000 metric tons for 1951. The present report shows an estimated 75,000 to 85,000 tons of aluminum for military requirements, i.e. for "maintainence of standby military forces", whereas careful estimates by the Army, Navy, and Air Force for IM-181 shows a comparable total of 33,000 tons. This difference should be explained. Finally the report shows an estimate of "300 to 500,000 tons of aluminum per year" for a European campaign. No explanation is offered for this estimate although it could be stated that in view of a requirement (reported elsewhere) of 300,000 tons of aluminum per year during World War II this is a reasonable estimate. The same statement could be made about the estimate of strategic stocks which was estimated on a presumably rational basis in IM-181 at about twice that shown in the present report. No explanation was given for the conclusion shown in the present report.

e. It is specifically recommended that all of these questions be fully developed. The conclusions in IM-181, at the least, have the advantage of rationalization and it would strengthen the present paper to refer to IM-181 where it has used the same data and to explain the points of departure otherwise. This gives a continuity of good features and explains improvements, if any.

8. Antimony: The paper has considerable interest; however in view of the uncertainty about plants, capacities, and technology of antimony as well as over-all production figures and requirements, it is believed that this paper could be considerably shortened to show only the essentials, i.e. more details about production and requirements. The statement that "the production of primary antimony in the USSR has never been sufficient to meet requirements" requires further explaination to have any real meaning. The further statement that peacetime requirements is "believed to be about 7,000 metric tons including secondary" likewise requires explanation; including a breakdown if possible. The subsequent estimates for various military operations also require explanation. These estimates seem to be entirely without any real foundation. Also if the USSR is to depend largely on China for its deficiency of antimony, a brief statement about location of deposits, plants for conversion, transport facilities, and vulnerabilities in China are in order. The statement about production--5,000 tons total which includes 3,000 tons primary and presumably 2,000 tons secondary should be amplified if possible.

9. Cadmium: As the paper points out, "no figures on the productive capacity of cadmium in the Soviet Union are known to this Office". The method of estimating production (about 200 metric tons) by assuming a fixed ratio of cadmium to zinc is, therefore, a stop gap, albeit the best available at present. The estimate of requirements (about 450 tons) by adding production calculated by this method to imports, therefore includes the several sources of errors involved in the latter estimates. Based on the growing uses and needs for cadmium it might be classed as a critical material; and these factors should be strongly borne in mind in future work and research on this subject. Otherwise it is suggested that the paper (after some rewriting) is the best that can be done at present.

10. Cobalt: While cobalt is included under the non-ferrous ministry it would appear that it would be more logical, both from the chemical and metallurgical standpoint, along with nickel in the ferro-alloy group. With regard to requirements, neither the estimate of Shimkin of 1,000 metric tons per year or the present estimate of 750 metric tons can be considered sound unless more fully supported, i.e. broken down into greater detail against actual use. The same remark applies to war requirements, e.g. with respect to such statements "limited operations in Yugoslavia or Western Germany would add probably fifty percent to cobalt requirements" and "double as the Soviets went into all out war". With regard to production (estimated at about 800 tons per year) as there are no direct figures on the subject the estimate based on percentage of cobalt in nickel ores is a good stop gap. However, it must be considered only as a stop gap as it would be dependent on type of nickel ores; and search should be continued for more direct evidence. In testing the reasonableness of requirements of 1,000 tons by Shimkin against 750 tons per year in the present report; the total availability including production of 800 tons per year and the average of 75 tons imports from Finland (and minor quantities from other sources) would make it appear that Shimkin's estimate is more nearly correct if the production figures in the present report are to be accepted. On the other hand the British production figure of 500 tons is more nearly correct if we are to accept requirement figures of 750 tons. The assumption is made, of course, that in either case the Soviets are short of cobalt since the amount imported is limited apparently by the amount they are able to obtain rather than to meet full requirements. The very small amounts sent to the Satellites are perhaps in reality for the benefit of the USSR economy and needs. This viewpoint would also have a bearing on the statement that "Economic warfare by the Allies would have no effect on the USSR as they are independent in the matter of having sufficient supplies of cobalt". In view of the above questions a review and reconsideration of the subject, as well as further research of the literature etc. is recommended.

11. Copper: The paper on the copper industry is, in general, a good one and well balanced. Specific questions are:

a. Development of why the actual productive capacity (about ten percent) is less than smelter capacity in view of large ore resources.

b. That the Moscow plant operating at considerably less than capacity.

The actual production and present maximum appear to be between 265,000 metric tons and 330,000 metric tons per year whereas the normal requirements are estimated at around 300,000 metric tons; and under present conditions at "between 300,000 and 400,000 metric tons per year. Detailed breakdown of estimates for present conditions and details of estimated requirements for various war conditions to supplement the OSS World War II estimate of 350,000 metric tons per year are desirable. The recommendations made in the paper for additional information on production, consumption, etc. should be supplemented by a thorough search of available literature.

12. Lead: While the paper on lead is fairly well rounded, in view of its importance and the admitted lack of definite information on the subject relative to production and especially consumption some attempts should be made to strengthen it. The following suggestions are made: On the production side (estimated at 100,000 metric tons per year) an attempt should be made to determine definitely the bottlenecks which definitely limit production as between resources and smelter capacity. Quality of ore is believed to be one limiting factor and this deserves special consideration. War destruction, rehabilitation, and prospects of expansion of smelter capacity is the other factor. On the requirements side it is quite certain that distribution patterns similar to that presented for aluminum are available which will permit a breakdown with regard to uses. The latter will be a check against the over-all cold war requirements of 120,000 metric tons to 140,000 metric tons per year. OSS and other reports should be checked for World War II requirements and, of course, estimates should be made in conjunction with the military services for actual war requirements to meet specific conditions.

13. Mercury: The paper on mercury is well presented, and considering the usual lack of definite and direct information on production and requirements, contains considerable material of intelligence value. It is lacking, however, in details and documentation which would permit a check of the data presented or allow its expansion to obtain additional derivative information. The literature and old reports (OSS, State, Army) should be scoured to obtain use pattern details and further information to back up the unsupported estimates shown for both peace and war.

14. Tin: The estimates on tin, both for production and requirements appear to be of the right order based on all available information. However, as for the presentation on lead, details and documentation which would permit a check are lacking. For example, war requirements (at least for World War II) might be estimated from information in available reports on production and records of imports, (for example from China). A statement of tin resources in China including transportation, vulnerability, etc. would also help to clarify potential supplies for war use. Use patterns and requirements by integration might also be attempted based on minimum needs (and reference to United States actual uses) e.g. as solder, bearing metals, bronze, with an estimate for tin plate based on canning, etc. These methods are tedious, but would be useful as checks.

15. Zinc: The questions to be raised in the zinc paper are similar to those which may be defined by those relating to a cross section of all of the papers on non-ferrous metals, i.e. more detailed information on production and requirements including documentation of the data presented. In the present case, e.g. resources appear plentiful and smelter capacity (190,000 metric tons per year) appears sufficient but actual production is lagging. The reason given for this condition is lack of balance between mining production facilities and transportation because of necessity of shipping zinc concentrates from the Far East and Central Asia to metal production centers of the Ukraine, the Caucasas and the Urals. This is important enough for a special evaluation by the Transportation Branch of this question since this situation does not appear off hand

in the study of the capabilities of the Trans-Siberian railway. A close study of ore quality might also explain part of the deficiency. On the requirements side (estimated at 130,000 tons) for cold war with the statement that "In case of a general war requirements would probably increase": more work should be done, particularly to obtain information on World War II requirements, use patterns, and other information both for independent estimates and as checks. The statement that Poland can make up any deficiencies calls for some analysis of the Polish zinc position.

16. In general the non-ferrous metals and minerals section (while admittedly lacking in direct information on production and requirements) has the basis for making fairly sound resource and production estimates. It is deficient in documentation, and use patterns and estimates of distribution to the various categories of the economy. More thorough search of the literature particularly in the Congressional Library and old OSS, State Department, and War Department records should throw some light on these deficiencies. A detailed study of the relationship between resources, ore quality, and smelter capacity should explain some of the inconsistencies which crop up in connection with production and the extent to which the Soviets can meet requirements. Comparison of United States use patterns making due allowance for known factors would also be helpful.

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